

What is claimed is:

1. A system comprising:
  - a first bi-directional communications module that provides primary service to one or more first service areas in a distribution network and backup service to one or more second service areas; and
  - a second bi-directional communications module that provides primary service to one or more of the second service areas and backup service to one or more of the first service areas,
  - wherein the first and second bi-directional communications modules comprise a redundancy group.
2. The system of claim 1 wherein each module comprises a primary and a secondary downstream output and wherein the primary downstream output is combined with a secondary downstream output of at least one other bi-directional communications module in the event of a failure of the at least one other bi-directional communications module.
3. The system of claim 1 wherein each module comprises a plurality of upstream ports and a plurality of upstream receivers mapped to one or more of the upstream ports, wherein a remapping of one or more upstream receiver takes place in the event of a failure of the at least one other bi-directional communications module.
4. A system comprising:
  - a first cable modem termination system module that provides primary service to one or more first service areas and backup service to one or more second service areas; and
  - a second cable modem termination system module that provides primary service to one or more of the second service areas and backup service to one or more of the first service areas,
  - wherein the first and second cable modem termination system modules comprise a redundancy group.

5. The system of claim 4 wherein each module comprises a primary and a secondary downstream output and wherein the primary downstream output is combined with a secondary downstream output of at least one other cable modem termination system module in the event of a failure of the at least one other cable modem termination system module.

6. The system of claim 5 wherein the primary downstream output is combined with a secondary downstream output of at least one other cable modem termination system module by an RF combiner.

7. The system of claim 4 wherein each module comprises a plurality of upstream ports and a plurality of upstream receivers that may be configured to receive data on one or more upstream channels.

8. A system comprising one or more pairs of cable modem termination system modules wherein both modules of a pair in a normal mode of operation provide primary service to at least one service area and also provide backup service in a backup mode of operation for at least one additional service area in the event of a failure of the module to which it is paired and in addition to continuing to provide primary service to the at least one service area.

9. A system comprising:

a first bi-directional communications module that provides primary upstream and downstream service to one or more first service areas, and secondary upstream and downstream service to one or more second service areas, the first bi-directional communications module comprising

a plurality of upstream ports linked to a plurality of the first and second secondary service areas, and

a plurality of upstream receivers mapped to one or more of the upstream ports;  
a first downstream port to provide downstream service to the one or more of the first service areas;  
a second downstream port to provide backup downstream service to the one or more of the second service areas;  
a status indicator to provide an indication of an operating status of the first bi-directional communications module to a secondary bi-directional communications module ; and

a second bi-directional communications module that provides primary upstream and downstream service to one or more of the second service areas, and secondary upstream and downstream service to one or more of the first service areas, second bi-directional communications module comprising

a plurality of upstream ports linked to a plurality of first and second service areas, and

a plurality of upstream receivers mapped to one or more of the upstream ports;

a first downstream port to provide downstream service to the one or more second service areas;

a second downstream port to provide backup downstream service to the one or more first service areas; and

a status indicator to provide an indication of an operating status of the second bi-directional communications module to the first bi-directional communications module.

10. The system of claim 9 wherein a remapping of one or more upstream receivers of the first bi-directional communications modules to effect upstream service to the one or more second service areas takes place in response to an indication that the second bi-directional communications module has failed; and

a remapping of one or more upstream receivers of the second bi-directional communications modules to effect upstream service to the one or more first service areas takes place in response to an indication that the first bi-directional communications module has failed.

11. The system of claim 10 wherein the system is a DOCSIS compliant hybrid fiber cable system.

12. A bi-directional multi-point to point communication system, comprising:

a distribution network;

a plurality of end user cable modems that transmit and receive data over the distribution network;

at least one head end terminal comprising

a plurality of modules to transmit downstream data in a first frequency bandwidth over the distribution network and to receive upstream data in a second frequency bandwidth over the distribution network,

wherein a first module of the plurality of modules provides primary service to one or more first service areas in the distribution network in a normal mode of operation and provides backup service to one or more second service areas in the distribution network in a backup mode of operation while continuing to provide primary service to the one or more first service areas; and

wherein a second module provides primary service to one or more of the second service areas in the distribution network in a normal mode of operation and backup service to one or more of the first service areas in the distribution network in a backup mode of operation while continuing to provide primary service to the one or more second service areas.

13. The system of claim 12, further comprising a controller to supervise timing of a change to a backup mode of operation.

14. The system of claim 13, wherein the controller is configured to enable modems to reconfigure upstream channels before a change is made to port maps in response to the change to a backup mode of operation.

15. The system of claim 12, wherein a change to a backup mode of operation of a module is initiated in response to an indication of failure from the module that provides primary service.

16. A method of providing back up service in a bi-directional multi-point to point distribution network for a first module that transmits downstream data in a first frequency bandwidth over the distribution network and receives upstream data in a second frequency bandwidth over the distribution network, comprising:

pairing the first module with a second module to form a redundancy group wherein the first module provides primary service to one or more first service areas in the distribution network in normal operation and backup service to one or more second service areas in the distribution network in a backup mode of operation and the second module provides primary service to one or more of the second service areas in the distribution network in normal operation and backup service to one or more of the first service areas in the distribution network in a backup mode of operation.

17. The method of claim 16, wherein the first and second modules each communicate a status signal to the other module of the pair indicating an operating status of the module.

18. The method of claim 17, wherein the signal comprises a heartbeat.

19. The method of claim 17 wherein a backup mode of operation of one module of the pair will begin in response to a change in the status signal of the other module of the pair.

20. The method of claim 19 wherein timing of the backup operation is configurable by an operator.

21. The method of claim 19 wherein timing of the backup operation is configurable to enable modems to reconfigure upstream channels before a change is made to port maps in response to the change to a backup mode of operation.